

Sub 1

- 1 An electrically conductive composition which comprises:
 - 2 a plurality of polymeric complexes; each polymeric complex comprising:
 - 3 a strand of a π -conjugated polymer; and
 - 4 a strand of a polyelectrolyte, the polyelectrolyte being non-covalently bonded to
 - 5 the π -conjugated polymer and having at least one reactive functional group, the reactive
 - 6 functional group facilitating the cross-linkage between the polymeric complexes when
 - 7 the complexes are heated.
 - 1 2. The composition of claim 1 wherein the π -conjugated polymer is selected from
 - 2 the group consisting of polyaniline, polypyrrole, polyacetylene and polythiophene.
 - 1 3. The composition of claim 2 wherein the polyelectrolyte is selected from the group
 - 2 consisting of poly(butadiene-co-maleic acid), poly(vinylmethylether-co-maleic acid),
 - 3 poly(acrylic acid), poly(ethylmethacrylate-co-acrylic acid) and poly(acrylamide-co-
 - 4 acrylic acid).
 - 1 4. The composition of 3 wherein the polyelectrolyte has a backbone and the
 - 2 functional group comprises:
 - 3 at least one unsaturated double bond in the polymer backbone of the
 - 4 polyelectrolyte.
 - 1 5. The composition of claim 4 wherein the functional group comprises at least one
 - 2 pendent group selected from the group consisting of carboxylic acid groups, hydroxy
 - 3 groups, amine groups, amide groups, nitrile groups, aldehyde groups and ketone groups.

1 6. The composition of claim 5 wherein there are at least two functional groups and
2 each functional group reacts with each other or optionally with each other and a
3 functional group from other polymeric complexes or optionally with each other and with
4 the functional groups of other polymeric complexes.

1 7. The composition of claim 6 wherein the polymeric complexes are water-borne or
2 optionally are dispersible in organic solvents.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100